DOCUMENT RESUME

ED 425 020 PS 027 206

AUTHOR Osher, David; Snow, Stephanie
TITLE Using Technology To Link Families and Schools to Research-Based Information.
PUB DATE 1998-12-00
NOTE 10p.; In: Proceedings of the Families, Technology, and Education Conference (Chicago, IL, October 30-November 1, 1997); see PS 027 175.
PUB TYPE Reports - Research (143) -- Speeches/Meeting Papers (150)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS At Risk Persons; *Diffusion (Communication); Disabilities; Educational Research; Elementary Secondary Education; *Internet; *Linking Agents; Partnerships in Education; Research Utilization; *Theory Practice Relationship

ABSTRACT

A historic problem in knowledge use is the gap--the disconnect--between research and practice. This gap is particularly noticeable in the education of children with disabilities and of others who are placed at risk of school failure--areas in which the United States Department of Education has invested significant research and development resources. This paper discusses how the Internet may be employed to address this disconnect by linking researchers, practitioners, and families and by connecting family members and practitioners to useful and usable information about practices based upon and validated by research. The paper first examines the research-practice gap and briefly identifies effective approaches to addressing that gap. The paper then examines the promise that the Internet presents, as well as barriers to its effective use. Finally, strategies and tactics to leverage the opportunities presented by the Internet and to address the potential problems that may weaken their impact are examined. (Author/LPP)

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ED 425 020

Using Technology to Link Families and Schools to Research-Based Information

David Osher & Stephanie Snow ■

Abstract

A historic problem in knowledge use is the gap—the disconnect—between research and practice. This gap is particularly noticeable in the education of children with disabilities and of others who are placed at risk of school failure—areas in which the United States Department of Education has invested significant research and development resources. This paper discusses how the Internet may be employed to address this disconnect by linking researchers, practitioners, and families and by connecting family members and practitioners to useful and usable information about practices based upon and validated by research. The paper first examines the research–practice gap and briefly identifies effective approaches to addressing that gap. It then examines the promise that the Internet presents, as well as barriers to its effective use. Finally, strategies and tactics to leverage the opportunities presented by the Internet and to address the potential problems that may weaken their impact are examined.

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Introduction

A historic problem in knowledge use is the gap—the disconnect—between research and practice. This gap is particularly noticeable in the education of children with disabilities and of others who are placed at risk of school failure—areas in which the United States Department of Education has invested significant research and development (R&D) resources. While federally supported R&D has produced an impressive knowledge base regarding effective practices and tools, family members and practitioners rarely draw upon this resource when they make decisions concerning which interventions they might employ (Carnine, 1997; Malouf & Schiller, 1995; U.S. Department of Education, 1995).

This paper will suggest how the Internet may be employed to address this disconnect by (1) linking researchers, practitioners, and families, and (2) connecting family members and practitioners to useful and usable information about practices based upon and validated by research. In order to do so, the paper will first examine the research–practice gap and briefly identify effective approaches to addressing that gap. We will then examine the promise that the Internet presents, as well as the barriers to its effective use. Finally, we will examine strategies and tactics to leverage the opportunities presented by the Internet and to address the potential problems that may weaken their impact.

Understanding and Addressing the Disconnect between Research and Practice

The research–practice disconnect reflects both cultural factors and the social structuring of how individuals organize their work and home lives, as well as how they exchange information with others. Cultural factors can be conceptualized as the existence of divergent knowledge communities that are organized around discrete values, rituals, and institutions. Structural factors involve those characteristics of families and practitioners that hinder knowledge exchange, as well as those characteristics of how individuals produce and employ knowledge that minimize the sharing of information between and among researchers, school-based practitioners, and family members.

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Cultural Factors

Researchers, practitioners, and families participate in different knowledge communities, each of which has a different set of beliefs, interests, incentives, and evaluative criteria (Osher, 1995; Fuhrman, 1992; Huberman, 1983, 1985). While some members of each of these groups participate in more than one community, each community has its own approaches to developing and exchanging knowledge. Researchers, for example, frequently communicate through research meetings and refereed journals, a mode that is rewarded by tenure committees and peer recognition. Practitioners most often look to fellow practitioners for new knowledge and are sometimes rewarded for attending practice-oriented workshops and practitioner meetings (Osher & Kane, 1993). Family members of children with disabilities often look to one other, to other families or disability organizations, and, in some cases, to other members of their social networks (McInerney, Osher, & Kane, 1997).

Structural Factors

The disconnect also involves two forms of structural isolation. The first is the isolation of practitioners and family members, both from one another and from other members of their own knowledge communities. This isolation limits the ability of all concerned to observe practice-based knowledge in an optimal environment. The second involves the isolation of practice-oriented knowledge in various separate sites—which makes much information essentially invisible to other practitioners, researchers, and family members.

While most practitioners and family members are interested in learning from the practical experience of their peers, they are separated, structurally, from these peers and from the environments in which they work or live. Sometimes their isolation is physical. Teachers, for example, may work in isolated classrooms (Darling-Hammond & McLaughlin, 1995; Rosenholtz, 1989; Huberman, 1983; Little, 1981; Lortie, 1975) or schools, and family members are often isolated in their homes or immediate communities. Other times, the isolation is a function of time and the pressure of addressing the needs of children with disabilities. Teaching and child-care schedules may not support meeting attendance or site visits, for instance. Finally, the isolation may be resource based—neither teachers nor parents may be able to afford the costs of travel or conference and workshop fees. (There also may be a cultural component to isolation. Members of different knowledge communities may also be divided by matters of race and ethnicity, language and culture, and intellectual orientation.)

Research Results

While knowledge use is always local, knowledge "transfer" is frequently conceptualized, described, implemented, and even evaluated in a "top-down" manner that views knowledge as produced by researchers and disseminated to practitioners, who then apply the research. Such an approach does not capture the concerns and experiences of the end users of research-based information—in this case, family members and school-based practitioners. During the past 4 years, researchers at the American Institutes for Research have conducted three sets of studies that examined knowledge use from an end-user's perspective. Our studies included focus groups, surveys, and analyses of national, state, and local infrastructures of information support. The results of this research provide a "bottom-up" picture of knowledge use from a local as well as an end-user perspective (McInerney, Osher, & Kane, 1997).

Focus Groups. The 20+ focus groups that the American Institutes for Research conducted with family members and practitioners highlight the importance of both cultural factors (such as divergent evaluative criteria) and of structural factors (such as the press of time). Practitioners and families report that they find it hard to access credible and usable research-based information—particularly when and where they need it. Furthermore, they rarely attend research meetings, and when they do, they often feel marginalized by agendas and rituals that do not include them. Similarly, they rarely read research journals, the language of which they frequently find inaccessible. In addition, practitioners and families are more interested in peer validation of interventions than tests of statistical significance, and in context-rich studies that enable them to reflect on the possibilities of adapting a practice than context-stripped studies that focus on general principles (House, 1981; Mishler, 1979).

Survey Data. Data from a recently completed "information needs sensing," which the Center for Effective Collaboration and Practice (CECP) sent to

teachers and family leaders from all 50 states, suggest how various populations and state respondents from mental health, juvenile justice, child welfare, and Head Start staff currently access information regarding children and youth with emotional and behavioral problems and disorders. When asked to identify where they went for information, the top three categories for family respondents were family support and advocacy organizations, other families, and conferences and workshops, while the top three for teachers were school psychologists, conferences and workshops, and behavioral consultants or specialists. When asked to evaluate which information sources were most accessible, family members most frequently mentioned family support and advocacy organizations, other families, and libraries. Table 1 summarizes some of the relevant findings from the information needs sensing.

Table 1

Where Do You Go for Information about Children and Youth with Emotional or Behavioral Problems?

Families	Teachers
68% family support & advocacy organization	21% school psychologist
22% another family	16% conference or workshop
11% conference or workshop	9% behavioral consultant

Two other studies have mapped the national (and in some cases state and local) infrastructure that families and school-based personnel can draw upon to gain information and support in order to improve outcomes for children with disabilities. These studies evaluated the flow of information and support from two perspectives. From a top-down perspective, we examined the flow of information and support from the national infrastructure down to the states and local communities across the country. From a bottom-up perspective, we evaluated the capacity of this infrastructure to be responsive to local needs in helping families and educators access information and obtain support for their children and students. Our findings suggest that while there is a rich national and state infrastructure, which is described in Figure 1, unfortunately, this infrastructure is fragmented, underused, and not well aligned. In addition, end users suggest that this infrastructure is hard to access, particularly by families who often face additional barriers of culture, geography, and social class.

Strategies to Address the Research–Practice Disconnect

A variety of strategies can be employed to (1) address the concerns of end users, (2) build upon the infrastructure, and (3) reduce the research–practice gap. Some strategies involve linking researchers, practitioners, and families in collaborative research (Englert & Tarrant, 1995; Guskey & Huberman, 1995). Others focus on actively involving practitioners and family members in the identification, conceptualization, implementation, evaluation, synthesis, and communication of information (Osher & Kane, 1993). CECP is employing these strategies in many of its undertakings to bring together and support the collaboration of researchers, practitioners, family members, and youth to identify, refine, produce, review, or communicate information.

Similarly, a variety of strategies can be employed to expand the range of sources that school-based practitioners and families draw upon when they respond to the challenge of improving outcomes for children, youth, and their families. These strategies, which we will explore during the remainder of this paper, include developing effective communication products that target specific audiences (e.g., Quinn, Gable, Rutherford, Nelson, & Howell, 1998); aligning the infrastructure of federal- and state-supported (or maintained) clearinghouses and technical assistance providers (Isaacs, Osher, Weidberg, Pisacane, & Sattler, 1998); employing "linking agents" to support identification and use of research based approaches (Havelock, 1995); and harnessing the potential of electronic technology, whether it be through cassette tapes, hyperlinked CD-ROMs, live video conferences (e.g., Osher & Hanley, 1996), or the Internet.

The Promise of the Internet and Its Limits

Essentially a network of computer networks, the Internet has the potential to link both isolated individuals and networks of individuals—in their homes, schools, libraries, and community organizations. Access to and use of the Internet have increased dramatically during the last few years. Originally the tool of a small number of research scientists, and then of individuals connected with large research institutions, the Internet is becoming increasingly important in everyday life. Surveys suggest that between 4% (Schwartz, 1996) and 9% (Goldberg & Richards, 1996) of Americans used the Internet in 1995, most of them for the first time. The National Center for Education Statistics found that nearly 8 of every 10 public schools in the nation had access to the Internet as of 1996, twice as many as in 1994 (NCES, 1997; Heaviside, Riggins, & Farris, 1997). The study also showed that the percentage of classrooms, computer labs, libraries, and media centers that are connected to the information superhighway increased from 3% in 1994 to 27% in 1997 (Trotter & Zehr, 1998). In addition, the American Library Association's Office for Information Technology found that in 1997 over two-thirds of U.S. public libraries had Internet access (Bertot, McClure, & Fletcher, 1997).

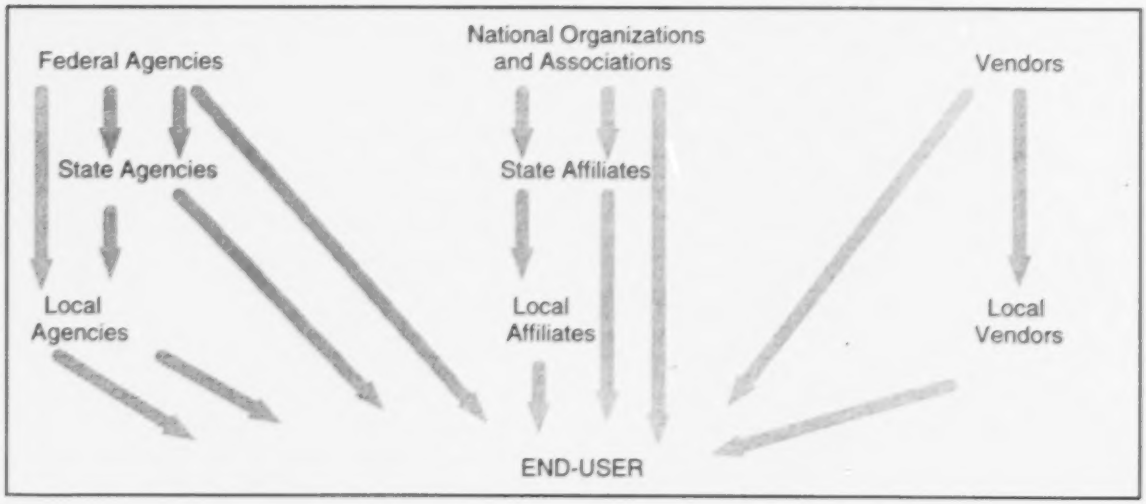

Figure 1. Infrastructure for technology.

While the promise of the Internet can be dismissed as hyperbole or "snake oil" (Stoll, 1995), the effective use of the Internet can help address the research–practice disconnect. When used effectively, the Internet can link researchers, family members, and school-based practitioners. With appropriate support, the Internet can bring information and support into sparsely populated frontier and rural areas (Byers, 1996; Odasz, 1994) as well as into densely populated but under-resourced inner cities. Similarly, the Internet can provide access to information to those whose mobility is limited by physical disability (National Council on Disability, 1996) or by lack of public transportation.

There are, of course, limits to the Internet's promise. Some limits involve the basic problem of access. Others involve the quality of available information. Still other limits involve how one can use the available information and the opportunity costs for accessing information via the Internet.

Equity of access is perhaps the major limiting factor. Anecdotal data suggest that the less economically advantaged a person is, the less likely he or she is to have access to the equipment (a computer and a modem), an Internet connection (an available phone line and software), the knowledge of how to use the software to make the connection, and the incentive or confidence to try to master the technology. Each of these factors constrains the possibility for Internet use. While a number of public (e.g., the Department of Housing and Urban Development) and private (e.g., Microsoft) efforts are targeting institutions in

economically disadvantaged communities, these efforts may not address key barriers to access (e.g., can one safely go to the public library or does the library schedule support Internet use by family members).

Another access barrier is a function of the rate and focus of innovation, as designers of sites on the World Wide Web (a component of the Internet) have more tools and technology to create very complex, exciting pages with large, animated graphics that respond to user input, but which are designed to work with the faster modems, more powerful computers, and cutting-edge software on the market. Unfortunately, many people, if they have access to the Internet and the World Wide Web at all, will have older computers, slower modems, and less powerful software that may not be able to handle these technological advances. In addition, screenreaders, which translate text on a Web page into sound output for users with visual disabilities, cannot process Web pages that employ advanced design techniques. As a result, information may remain out of reach.

The quality of information is a second major barrier. Searching, or "surfing," the World Wide Web can link individuals to a great deal of useful information. Unfortunately, Web surfing will also turn up information that is irrelevant, unreliable, and outdated. A basic Web search on a particular topic can produce tens of thousands of Web sites—an enormous quantity of information, much of which may be related only peripherally to the topic. The lack of regulation that provides free and unrestricted access to information makes a great deal of information available, but it also means that there is no way to ensure that the information is current, accurate, or relevant to the topic at hand. Consumers of information on the World Wide Web must develop strategies that enable them to weed out information that doesn't serve their needs.

Furthermore, knowledge use involves more than passively receiving information—it involves adapting and applying that information to new situations and new contexts. If individuals are to employ the Internet efficiently, they may need support, including strategies for searching for useful information and identifying appropriate resources, as mentioned above. Similarly, if individuals are to find the information they seek on the Internet, they also need to know how they will make use of what they find. Knowing one's goals, and where and how to look for information, is much like a road map to the Internet—with it, the chances of quickly finding one's destination increase, while without it, one may eventually reach the destination only after a great waste of time, energy, and effort.

The Center for Effective Collaboration and Practice—Bridging the Gap

People seeking information on the Internet need more than just a computer, a modem, and software; they also require support and knowledge of how to use the technology. Formidable as these barriers to effective use are, much is being done to address them and increase not just the promise of the Internet, but the actual results it delivers. The Center for Effective Collaboration and Practice (CECP), a center supported by the U.S. Department of Education's Office of Special Education Programs to improve services to children and youth with or at risk of developing emotional and behavioral disorders, provides an example of encouraging, supporting, and facilitating the use of technology among the various practitioner and stakeholder communities.

CECP is linking individuals and various groups of people via the Internet, through listservs, a Web site, and online discussion groups. In addition, CECP is working with an urban and rural community-based organization to assist them in acquiring and mastering technological communication and to learn about how they overcome barriers to effective use. The first year of CECP's foray into the field of technology has yielded a good amount of experience and insight, and much has been learned.

Listservs. Currently, CECP runs 12 listservs—computer programs that distribute electronic mail (e-mail) to a group of participants. Any participant can send a message to the listserv, which will forward it on to the entire group. In addition to smaller lists for various working groups, CECP administers larger listservs for the following:

- discussion of the 1997 Amendments to the Individuals with Disabilities Education Act (IDEA),
- family members of children and youth with emotional and behavioral disorders (EBD),
- school psychologists, and
- state consultants and specialists in EBD.

Listservs can function as a discussion forum or as an e-mail newsletter to connect people with one another and with resources, such as citations for books and journal articles, Web sites, and contact information for people and other organizations. Subscribers (a technical term for participants—there is no cost to be on a listserv) can submit questions, comments, resources, or advice to large numbers of people very quickly. Even simply "lurking" (subscribing and reading, but not posting messages) can provide information through "listening" in on discussions, allowing people to draw upon one another's experience and expertise quickly. In addition to those it maintains, CECP offers access to an extensive collection of listservs on a variety of topics maintained by other organizations.

Web Site. CECP has developed an extensive Web site (http://www.air.org/cecp) to accomplish a variety of purposes:

- to introduce users to CECP, its mission, staff, and plan of work;
- to link users to organizations, researchers, and others with whom CECP is collaborating;
- to provide access to important documents, such as the proposed regulations to the 1997 Amendments to the IDEA or a monograph on functional behavioral assessment;
- to interact with users via a needs assessment and online discussions (see below); and
- to connect users to other information sources through a large collection of links to other Web sites.

Ever-expanding, the Web site is frequently edited as new resources become available and old ones need updating. CECP staff also post conference announcements, newsletters, and other resources from our collaborators who may not have their own Web sites. In addition to the more conventional resources such as documents and links, CECP also offers interactive discussions six to eight times a year.

Online Discussions. One of ways CECP most directly addresses the disconnect between research and practice over the Internet is through online discussion forums. Building on a model developed by the National Center to Improve Practice in Special Education through Technology, Media and Materials (NCIP), CECP hosts interactive programs called "Author Online" and "Online Expert," in which an author of a recent research article or an expert in a particular field spends 3 weeks answering questions and moderating a discussion on a particular topic. The article or relevant background material is available on the Web site, providing an opportunity for the nonresearch community to interact directly with the author or expert to clarify particular points, request more information, or respond with personal experience. The forums also allow researchers to make direct contact with the people their research is intended to serve.

Outreach. Another component of CECP's work in using technology to bridge the research-to-practice gap are outreach projects in Richmond, Virginia, and a rural community in West Virginia. The projects are designed to assist a parent group in each community in the acquisition of computers, Internet access, and knowledge and skills to use them. The project also documents the process that communities employ so that it can be replicated in the future. For example, staff from CECP traveled to Richmond to do a presentation and training on accessing information via the Internet, using the CECP Web site as a point of reference. In follow-up activities, CECP staff are supporting and assisting the parent group in Richmond as they survey the information needs of their community, build a database to analyze the results, and design and construct a Web site for the community. Similarly, family members from the Richmond site shared their knowledge about using computers with members of the family organization who attended workshops at which Richmond representatives presented.

Lessons Learned. The various activities undertaken by CECP to employ technology to bridge the research-to-practice gap have provided a great deal of insight into how best to proceed. One lesson is that the various components of the Internet work well together. When an online discussion approaches, CECP publicizes it through the various listservs as well as traditional newsletters and journals, and many people respond via e-mail to say that they are excited about the topic and are looking forward to the discussion. Conversely, we have also learned that many people only have access to one component of the Internet. Not everyone who has e-mail can

get on the World Wide Web, and vice versa, although free Web-based e-mail is increasingly available. Therefore, CECP makes sure to always provide a toll-free number people can use to order hard copies of resources available on the Web site and to make use of print media, not just e-mail, to advertise online discussions.

In addition to lessons learned through basic experience, CECP actively solicits feedback about its Web site via both the Web and e-mail. A "guest book" page on the Web site allows visitors to send their thoughts and comments. In addition, at the bottom of each page on the Web site is an e-mail icon that will send a message to CECP staff, which is especially useful if a particular page malfunctions. A large number of comments that CECP has received thank us for creating a site that uses minimal graphics and no complicated programming, assuring that it will load quickly. Many people who do have access to the Internet are often using older technology, and they experience a great deal of frustration when pages take 2 to 4 minutes or longer to load, or fail to function altogether.

A final insight CECP has gleaned from its work in this area is that many people, for a variety of reasons, fear technology, and that a helpful person supporting them in their explorations of the virtual frontier can assuage many discomforts. CECP staff provided such support at the 1997 annual meeting of the Federation of Families for Children's Mental Health, where they had an information booth with a laptop computer hooked up to the Internet to display the CECP Web site and demonstrate how to use the Internet, and even how to write Web pages using just a word processor and browser. Many people were hesitant to even touch the computer, but often, once they learned the basics, marveled at the possibilities and vowed to bring the information home to their organizations, districts, and communities, which demonstrates that resources, knowledge, and skills can be disseminated through a handful of willing, committed people.

The research-to-practice gap remains a formidable problem. Both cultural (disparate knowledge communities) and structural (physical isolation, time constraints) factors impede the ability of family members and practitioners to take advantage of the expanding knowledge base of effective practices and tools. Focus groups and surveys have collected important data regarding how family members and practitioners seek out and use information, what useful information looks like to them, and what barriers they encounter trying to access and use it. This research has yielded a variety of strategies for addressing the disconnect, including both linking members of the various communities to one another and actively involving families and practitioners in the development of information products. In addition, various strategies are being employed to expand the range of sources available, such as harnessing the potential of electronic technology, including the Internet.

Studies show that access to the Internet is expanding at an increasing rate. The Internet is a useful tool for addressing the disconnect between research and practice because it can link members of different knowledge communities, bring information and support into areas that lack them, and provide access to information for those whose mobility is limited. However, as promising as the Internet may be, barriers remain in the form of access problems, inconsistent information quality, and lack of strategies for knowledge use. The Center for Effective Collaboration and Practice is employing listservs, a Web site, online discussion groups, and outreach projects to use the Internet to get valuable information into the hands of family members and practitioners, and to assist communities in acquiring not only computer equipment and Internet technology, but also the skills and support to use them effectively.

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